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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/604,836	06/27/2000	Amnon Meyers	A-68807/AJT/JWC	6540

7590

04/08/2004

DAVID L ALBERTI
GRAY CARY WARE & FREIDENRICH LLP
1755 EMBARCADERO ROAD
PALO ALTO, CA 94303-3340

EXAMINER

HARPER, V PAUL

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 04/08/2004

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/604,836

Applicant(s)

MEYERS, AMNON

Examiner

V. Paul Harper

Art Unit

2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/23/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6 and 9-13 is/are rejected.
- 7) ☒ Claim(s) 5, 7 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 6, and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. ("Acquisition of Semantic Patterns for Information Extraction from Corpora", Proceedings of the Conference on Artificial Intelligence for Applications, 1993, pp. 171-167), hereinafter referred to as Kim, in view of Soderland ("Learning Information Extraction Rules for Semi-structured and Free text,"

Regarding claim 1, Kim teaches a method for the acquisition of semantic patterns for information extraction from corpora, including the input of samples of text (p. 171, col. 2, ¶ 3, input text, and §'s 2.1 and 2.2), but Kim fails to specifically teach "providing a sample hierarchy, said sample hierarchy comprising samples of text." However, the examiner contends that this concept was well known in the art, as taught by Soderland.

In the same field of endeavor, Soderland discloses the use of semi-structured, labeled text (§1.1, case frames are nested within a text phrase, where the nesting of information implies a hierarchical organization).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kim by specifically providing semi-structured text, as taught by Soderland, since this is an important class of text used for information extraction.

Kim further teaches:

- extracting at least one rule from said sample hierarchy, said rule describing how to process a portion of text (p. 171, col. 2, ¶3, extracts patterns, and §2.1 and 2.2);
- generating a pass from said rule, said pass containing instructions to operate a text analyzer (Fig. 2, §2.3); and
- constructing a text analyzer containing said pass (abstract, §1).

Regarding claim 2, Kim in view of Soderland teaches everything claimed, as applied above (see claim 1). In addition, Kim teaches “said rule is generalized into multiple rules and multiple passes” (Fig. 2, “generalizations”, §3, Step 5).

Regarding claim 3, Kim in view of Soderland teaches everything claimed, as applied above (see claim 1). In addition, Kim teaches “multiple passes are added to said text analyzer” (§1, patterns merged with the database).

Regarding claim 4, Kim in view of Soderland teaches everything claimed, as applied above (see claim 3). In addition, Kim teaches “multiple passes are arranged in

a cascading manner having a sequence of passes such that rules associated with a pass are applied to subsequent passes" (Fig. 2, "merge into the knowledge base").

Regarding claim 6, Kim in view of Soderland teaches everything claimed, as applied above (see claim 4). In addition, Kim teaches "the step of allowing a user to control the extraction of rules from the sample hierarchy" (Fig. 2, "user", §2.3).

Regarding claim 9, Kim in view of Soderland teaches everything claimed, as applied above (see claim 6). In addition, Kim teaches "the step of allowing a user to designate attributes associated with said rules, said attributes guiding the application of said rules" (p. 171, col. 2, ¶3, last sentence, Fig. 2, "user").

Regarding claim 10, Kim in view of Soderland teaches everything claimed, as applied above (see claim 1). In addition, Kim teaches that "multiple rules are generalized and merged into a single rule if there is a difference between the multiple rules" (Fig. 2, §2, Step 6, "Merging into the knowledge base").

Regarding claim 11, Kim in view of Soderland teaches everything claimed, as applied above (see claim 10). In addition, Kim teaches "samples maybe contained in a sample file" (§1, "input text," Fig. 2, "sample sentences").

Art Unit: 2654

Regarding claims 12 and 13, these claims contain limitations similar to those given above and are rejected for the same reasons.

Response to Arguments

2. Applicants' arguments regarding claims 1-4, 6, 9-13 are not considered persuasive.

3. Applicants assert on page 5:

Kim does not teach a method for creating a text analyzer (such as a parser), but rather focuses on a method for generating the semantic rules of a semantic analyzer. Indeed, Kim requires a parser in order to supply the inputs for his system, while the present invention teaches methods for generating such a parser. Kim's methods can in no way be applied to the creation of the parser that he uses for his inputs.

The Applicant asserts on page 1 (lines 1-3) of the specification that *text analysis* is an area of computer science that *focuses on processing text to extract information through pattern recognition*. Kim teaches a technique for the acquisition of semantic patterns for information extraction and describes the system as a "knowledge acquisition tool to extract semantic patterns for memory-based information retrieval system" (p. 171, col. 2, ¶3) where such information is used by an "analyzer" to interpret an input sentence (p. 171, col. 1, ¶2, last sentence). Thus the Examiner maintains that the concept of text analysis encompasses the techniques described by Kim.

4. Applicants further assert on page 5:

The Examiner asserts that Soderland provides the hierarchy of text samples that is recited in the claimed inventions but absent in Kim. However, neither Kim nor Soderland make use of a hierarchy of text samples or annotations culled from a set of input documents. The fact that Soderland uses "semi-structured" input documents has no bearing on the patentworthiness of the present invention. The claimed inventions use hierarchies of text samples or user-designated units of interest -- structurally meaningful samples culled from input documents, such as "nouns," "noun phrases," and "adverbial phrases." Soderland makes use of "tagged texts" as part of the learning process, but those tags are not organized into a hierarchy or any other discernable representation. We note also that Kim makes use of entire sentences to find semantic events of interest within those sentences, rather than a hierarchy of text samples.

The American Heritage Dictionary defines a **hierarchy** as a "series in which each element is graded or ranked." Figure 4 in the specification is labeled as a "sample hierarchy" where phrases and elements contained within the sample text are structured and labeled. Correspondingly, Soderland gives an example (p. 2) where "tucked among the telegraphic abbreviations is information" in the form of case frames (i.e. structured, labeled information from nested **within** the phrase). Furthermore, no specific references can be found in the specification that structurally meaningful samples include "nouns," "noun phrases," etc. Thus the Examiner maintains that Soderland's nested, semi-structured text corresponds to the Applicants' "hierarchy of text samples."

5. Applicants assert on page 6:

We note that the review makes extensive use of Figure 2 in Kim, and makes assumptions and interpretations about that figure that are not corroborated by the methods discussed within the body of Kim. For example, the step of "merging into the knowledge base" is used to infer an

Art Unit: 2654

entire method of generalizing, comparing, and merging rules, with no specific corroboration in the body of Kim.

Kim gives a detailed description of Figure 2 in §3, on pages 173-175.

6. Applicants assert beginning on page 6:

Claims 1 and 13

Because claims 1 and 13 include similar elements (a)-(d), the following discussion applies to both claims. The Examiner rejected independent claims 1 and 13 contenting that Soderland teaches a hierarchy of text samples, anticipating claimed inventions, but such a hierarchy is nowhere to be found in Soderland. As defined in the specification, a "sample is a piece of text that users have decided is a unit of interest, such as a name or an idiomatic phrase." The review contends that Soderland's use of "semi-structured" input documents anticipates a hierarchy of text samples (e.g., annotations) within the input documents, but the semi-structured nature of the input documents themselves in no way relates to the samples culled from those input documents. Thus, this feature of Soderland cannot serve as a basis for rejecting claim 1.

While the review "contends that this concept was well known in the art," the review provides no precedent for a hierarchy of text samples wherein those samples consist of annotations culled from a set of input documents. Because there is no evidence to support that such a precedent did exist, claim 1 is therefore valid.

Further, since Soderland uses on such hierarchy, Kim in view of Soderland cannot be said to use such a hierarchy, and the argument for rejection cannot be supported. Since the proposed combination fails to disclose or suggest at least claim element (a), it cannot render obvious claim 1 or 13, or any claims depending from those claims (i.e., claims 2-11). For at least these reasons, Applicant respectfully requests that the related rejections be withdrawn.

See §4, above. Soderland has case forms nested within phrases.

Art Unit: 2654

7. Applicants assert on page 7:

Claim 2

Because claim 2 depends from claim 1, the proposed combination cannot render claim 2 obvious for at least the reasons set forth above. Additionally, claim 2 is patentable on the following independent basis. With respect to claim 2, the Examiner states that Kim teaches said rule is generalized into multiple rules and multiple passes." But Kim builds a semantic analyzer and not a text analyzer (of which a parser is a main embodiment). The semantic analyzer can be construed as having a single pass, and Kim makes no reference to generating multiple rule sets or multiple passes for a semantic analyzer. Nor can Kim's methods be used to generate a parser; rather, Kim's method relies on a pre-existing parser to supply needed inputs. In contrast, the claimed method focuses on the automatic generation of precisely the type of parser that Kim requires for input data.

The claimed method regarding multiple passes is riot simply an artifice for separating a rule set into multiple parts. The text analyzer is constructed in such a fashion that each new pass constructed depends on the analysis performed by all the preceding passes. This intricate interdependency is not disclosed or suggested by "Kim, Soderland, nor indeed by any precedent to be found in the literature.

Kim teaches a looping acquisition procedure (i.e., a multi-pass procedure) where a sentence is processed (i.e., compared using existing structures and then generalized updating the existing structures) (see Figure 2, p. 175, in particular Step 5).

Regarding the notion of a "text analyzer", see §3, above. Furthermore, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the generation of a parser) is not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Art Unit: 2654

8. Applicants assert on page 8:

Claim 3

Because claim 3 depends from claim 1, it cannot be rendered obvious for at least the reasons set forth above. Additionally, claim 3 is patentable on the following independent basis. Kim does not teach or suggest that "multiple passes are added to said text analyzer." Kim's merging rules into a knowledge base serves to create a single set of rules, rather than multiple cascading rule sets (i.e., passes) as taught by the claimed invention.

Regarding "multiple passes are added to said text analyzer," see §7. Note in Figure 2 that the FP-structure (set of rules) is in the processing loop and the during the processing of each pass the FP-structure is updated (p. 175, Step 5).

9. Applicants assert on page 8:

Claim 4

Because claim 4 depends from claims 1 and 3, it cannot be rendered obvious for at least the reasons set forth above. Additionally, claim 4 is - patentable on the following independent basis. Kim does not teach that "multiple passes are arranged in a cascading manner having a sequence of passes such that rules associated with a pass are applied to subsequent passes." The Examiner suggests that Kim teaches a method for generating a single set of semantic rules, which can be equated at most to a single pass of the text analyzer that the claimed method teaches. However, Kim does not even do this much, as he generates rules for a semantic analyzer, not a text analyzer, and uses a text analyzer (i.e., a parser) to produce inputs for generating a semantic analyzer. Nor can Kim's method generate such a parser, which is a typical output of the claimed method.

Regarding "multiple passes are added to said text analyzer," see §7. Note in Figure 2 that the FP-structure (set of rules) is in the processing loop and the during the processing of each pass the FP-structure is updated (p. 175, Step 5)

10. Applicants assert on page 9:

Claim 6

Because claim 6 depends from claims 1 and 4, it cannot be rendered obvious for at least the reasons set forth above. Additionally, claim 6 is patentable on the following independent basis. As we have described, the claimed invention teaches a fully automated method for generating rules and passes of a text analyzer. The user in the claimed method can set up a hierarchy of text samples (e.g., annotations) as well as other parameters for analyzer generation, after which the method automatically generates a text analyzer. Kim teaches a method in which the user is called upon during various parts of the semantic rule generation process, which is a substantially different process than that of the claimed invention. Diverse methods for generating rules may involve a user at differing stages and for differing roles. The mere involvement of a user does not of itself imply an equivalence of methods.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "automatically generate") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In this case, the claim language "**allowing a user to control** the extraction of rules from the sample hierarchy" indicates an approach where the user has the ability to interact with the process which what *is* taught by Kim (p. 173, §2.3, "a semi-automatic semantic pattern acquisition tool" where user interaction can occur).

11. Applicants assert on page 9:

Claim 7

Because claim 7 depends from claims 1 and 5, it cannot be rendered obvious for at least the reasons set forth above. Additionally, claim 7 is

patentable on the following independent basis. As stated in Claim 7, the user in the claimed method performs distinct actions from the user in Kim's method. The user in the claimed method specifies general attributes used to modify the overall manner in which the rules and passes of a text analyzer are generated. The user in Kim's method, on the other hand, makes decisions regarding the generation and acceptability of specific semantic rules for a semantic analyzer, as those rules are presented by the system.

As stated in the rejection of claim 7, Kim teaches the ability to interact at some decision points (p. 171, col. 2, ¶3). Furthermore, in §2.3 (¶1), Kim discusses in detail how the interaction can aid in the mapping of slots to the phrasal pattern and in determining the correctness of the FP-structure (i.e., the rules).

12. Applicants assert on page 10:

Claim 9

Because claim 9 depends from claims 6, 4 and 1, it cannot be rendered obvious for at least the reasons set forth above. Additionally, claim 9 is patentable on the following independent basis. As stated for Claims 6 and 7, the role of the user in the claimed methods and Kim's methods cannot be equated. In the claimed method, the user specifies attributes for the generation of passes and rules of a multi-pass text analyzer, while Kim's user makes decisions about the generation and acceptability of individual semantic rules as they are presented by the rule-generation method.

See §7-9, above.

13. Applicants assert on page 11:

Claim 10

Because claim 10 depends from claim 1, it cannot be rendered obvious for at least the reasons set forth above. Additionally, claim 10 is patentable on the following independent basis. While various automated rule generation methods involve the steps of creating, generalizing, and merging rules, the claimed methods for generating, generalizing, and merging rules cannot

Art Unit: 2654

be equated with those of Kim. In the claimed invention, rules are compared based on the similarity of their *syntactic structure* and ordering. In the case of Kim, rules are compared to pre-existing semantic "frames" in order to determine if those rules should map to those frames.

The review cites Figure 2 of Kim in this and other cases to infer methods for generalization and merging of rules that are not corroborated elsewhere in the body of Kim. (p. 173, col. 2, par. 2) states "While merging, it is combined with other patterns to save space and save parsing time." This also provides insufficient information to infer in detail the particular processes for generalization and merging are used in Kim, and cannot be the basis for rejecting specific claims and specific methods for such processes. Given that semantic rules are processed in Kim, while *syntactic rules* are processed in the claimed invention, and that Kim employs pre-existing "frames" while the claimed invention does not, these methods substantially differ at the outset. (Italics added)

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the concepts of syntactic structures or syntactic rules) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In this case, the claim states that "multiple *rules* are generalized and merged into a single *rule* if there is a difference between the multiple *rules*." No distinction is made between syntactic or semantic rules. Furthermore, as stated in the rejection of claim 10, Kim teaches the generalization and merging of the acquired FP-structure (i.e. rules) into the database.

Art Unit: 2654

14. Applicants assert on page 11:

Claim 11

Because claim 11 depends from claims 10 and 1, it cannot be rendered obvious for at least the reasons set forth above. Additionally, claim 11 is patentable on the following independent basis. We have already shown that the samples in the claimed inventions consist of annotations culled from input documents, while Kim's samples consist entirely of whole sentences, and Soderland uses a repository of texts. The claim limitation that such samples and their associated offsets and similar attributes may be represented in a file data structure is not equivalent to an assertion that the sentences of Kim may be stored in a file, nor to an assertion that Soderland's input documents consist of "semi-structured and free text." In particular, the fact that Soderland uses input documents that are "semi-structured" does not correlate with the use of a hierarchy of text samples, wherein such samples are annotations culled from their input documents. Soderland's method uses hand-tagged texts, but the tagged portions of text are not organized into a hierarchy or any other representation apart from the input document containing those tags.

See §4, above.

15. Applicants assert on page 11:

Claim 12

Applicant incorporates by reference, the arguments set forth above relative to claims 1 and 13. For at least these reasons, claim 12 is patentable over the proposed combination.

See §7, above.

Allowable Subject Matter

Claims 5, 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

It is noted that the closest prior art of record, Kim does not teach that samples are associated with offset values, said offset values identifying locations in a parse tree data structure.

Citation of Pertinent Art

16. The following prior art made of record but not relied upon is considered pertinent to the applicant's disclosure:

- Charniak, E. ("Tree-bank Grammars" Jan 1996, Department of Computer Science, Brown University, Technical Report CS-96-02) teaches the generation of production rules from hand-parsed sentences in a tree bank.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

Art Unit: 2654

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

or faxed to:

(703) 872-9314

Hand-delivered responses should be brought to:


Crystal Park II
2121 Crystal Drive
Arlington, VA.
Sixth Floor (Receptionist)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. V. Paul Harper whose telephone number is (703) 305-4197. The examiner can normally be reached on Monday through Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil, can be reached on (703) 305-9645. The fax phone number for the Technology Center 2600 is (703) 872-9314.

Art Unit: 2654

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service office whose telephone number is (703) 306-0377.



VPH/vph
April 5, 2004



RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER